NOTES ON THE SPECIES OF AMARANTHUS IN THE WESTERN CAPE PROVINCE.

By

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While studying the species of *Amaranthus* that occur on the Cape Peninsula in the course of the preparation of a flora of that region, it became apparent that there existed a considerable degree of confusion both in the descriptions and in the nomenclature applied. Material collected and that in herbaria could be arranged into a number of distinct types, but the identification of these brought to light several difficulties. In more than one case quite distinct plants have been grouped together under one name : this is especially the case with what have been termed "*A. Blitum*," "*A. viridis*," and "*A. Thunbergii*" by South African botanists. Further, the species which is the commonest in the vicinity of Cape Town did not appear in the floras at all though specimens of the plant can be found under a variety of names in collections.

In the following account the descriptions and identifications have been based in the main on the monograph of the genus by A. Thellung in Ascherson und Graebner Synopsis der mitteleuropäischen Flora V. 1, 1914, 225-356. In this work the species are divided up into a large number of divisions, subspecies, races, varieties, and so forth. These subdivisions have not been taken up here.

Thellung's arrangement is not unfamiliar in South Africa as it was adopted by Burtt-Davy in Manual of the Flowering Plants of the Transvaal I. 1926, 180. The arrangement does necessitate a number of name changes as compared with the account of the genus by Cooke and Wright in Flora Capensis V i. 1910, 408. These changes have been necessitated by the rejection of certain names which have been shown to be based on a mixture of species and the retention of which even in a restricted sense is liable to lead to confusion. *A. Blitum* L., for example, is one of these : this name has been applied by African botanists to what is known as *A. angustifolius*, Lam., but by many European botanists to *A. lividus*, L. *A. viridis* L. is another name rejected by Thellung ; it has been variously applied to *A. lividus* L., *A. gracilis* Desf and broad leaved forms of *A. augustifolius* Lam. The rejection of these names of completely doubtful application as a source of confusion has been supported by other botanists (*e.g.*, Rouy, in Fl. Fr. XII 1910, 22).

Amaranthus L. is a cosmopolitan genus of which several species have become widespread as weeds more especially in the warmer temperate

regions. So much so is this the case that the determination of the real home of some of them is a matter of some difficulty. In South Africa the representatives are partly indigenous and partly introductions from other regions.

Owing to the confusion that has existed in the delimitation of the species, rather full descriptions are given here. The scarcity of records is such that the distribution of the species cannot be given in detail. This is only elaborated for the Cape Peninsula.

The following key covers the species known to occur in the Western Cape Province. Of the nine species enumerated four have been found on the Cape Peninsula.

KEY TO THE SPECIES.

A. Perennial. Stem and leaves hairy. Perianth 2 .. .. 6. *A. deflexus.*
AA. Annual. More or less glabrous. Perianth 3—5.
B. Perianth and stamens 4—5.
C. Perianth 5. Inflorescence a dense terminal spike 1. *A. hybridus.*
CC. Perianth 4—5. Inflorescences short axillary .. 9. *A. Schinzianus.*
BB. Perianth and stamens 3.
C′ Inflorescence terminal, a loose compound spike. Fruit not regularly dehiscent.
D. Fruit much exceeding perianth, smooth .. 7. *A. lividus.*
DD. Fruit shorter than perianth, wrinkled .. 8. *A. gracilis.*
C′C′ Inflorescences axillary shorter than the leaves. Fruit a pyxidium.
D′ Plant tall. Leaves obovate-spathulate. Perianth awn-pointed .. .. 2. *A. Thunbergii.*
D′D′. Shorter. Leaves oval or narrow. Perianth not awn-pointed.
E. Leaves linear-oval. Perianth cuspidate .. .. 5. *A. angustifolius.*
EE. Leaves small rounded at tip more or less orbicular. Perianth short pointed. Plants not over 15 cm. ..
E. Perianth membranous. Fruit wrinkled .. .. 3. *A. Dinteri.*
FF. Perianth green at top. Fruit smooth .. .. 4. *A. capensis.*

1. *A. hybridus* L. (*A. paniculatus* Cooke and Wright Flor. Cap. *et auct. S. Afr.*)

Annual. Erect, 30—40 cm., branches ascending, glabrous. Leaves long petioled (4—6 cm.), obovate, attenuate at base, acute at top, up to 8 × 3·5 cm., dark green with prominent pale nerves below. Inflorescence a dense terminal compound spike, 10 cm. long or more, on main stem and branches. Bracts longer than perianth, awn-pointed. Perianth 5, awn-pointed. Points of bracts and perianth becoming hard in fruit.

Stamens 5. Fruit narrowed above, shorter than perianth, opening by transverse split. Seed black.

Dampish places especially on sand, common in cultivated land. Not native but widely spread. On Cape Peninsula on flats from Rondebosch to Muizenberg, also Hout Bay, etc. Flowers Feb.-Mar. A common weed of warm countries. The South African plants belong to the subspecies *A. hybridus hypochondriacus* Thell. (*A. hypochondriacus* L.) The common form of the plant has the stems and spikes straw coloured sometimes tinged with red.

2. *A. Thunbergii* Moq.

Stem erect, 40—60 cm., sometimes branched, smooth. Leaves spreading, long petioled (1—2 cm.), obovate-spathulate, 1—2 × 1 cm., cuneate at base, blunt at tip, dark green. Inflorescences short, axillary. Bract lanceolate, awn-pointed, shorter than perianth. Perianth 3, awn-pointed, as long as fruit, usually reddish. Points of bracts and perianth not hardening in fruit. Fruit opening by rather irregular transverse split. Seed black.

Sheltered and damp places at low altitudes. Indigenous to S. Africa and rather widely spread. On Cape Peninsula on flats and lowest slopes from Mowbray to Muizenberg. Flowers Feb.-Mar.

3. *A. Dinteri*, Schinz.

Annual, small, 5—12 cm., branched, spreading or ascending. Leaves obovate or suborbicular, petiolate, narrowed below, blade equalling petiole not over 1 × 0·7 cm. Inflorescences short dense axillary. Bract ovate-lanceolate, pointed, membranous with green midrib, shorter than perianth. Perianth 3, unequal, 1 or occasionally 2 in female flowers smaller, membranous, acute, shortly pointed, longer than fruit. Fruit widened above, wrinkled transversely dehiscent. Seed dark brown or black with sharp margin.

Drier regions, generally on disturbed soil, Karroo, Namaqualand, and South-West Africa. Indigenous. Flowers Nov.-Jan.

This species has been confounded with *A. Thunbergii* and with small forms of *A. angustifolius*. The small obovate blunt leaves and short pointed perianth serve to distinguish it.

4. *A. capensis* Thell.

Vey much like *A. Dinteri*, but larger, slightly hairy in the upper parts, leaves abruptly narrowed to petiole, bract equalling the perianth, perianth with very short points and green in upper part, fruit as long as perianth and smooth.

A critical species that needs further study. At present only known from a specimen collected by Ecklon and Zeyher (No. 88) and as a rare

alien in Europe. Thellung in describing the species suggests that it may be a monstrous form of *A. Dinteri*.

5. *A. angustifolius* Lam. (*A. Blitum* Cooke and Wright Flor. Cap.)

Stems 20—30 cm., ascending or prostrate, smooth. Leaves long petioled (1—2 cm.), blades narrow oval, 2—3 × 0·5 cm., entire, slightly undulate at edges, bright green. Inflorescences short, axillary, green. Bracts shorter than perianth, elliptic, pointed. Perianth 3, long pointed, membranous with green midrib, as long as ovate fruit. Fruit splitting transversely, compressed, shortly mucronate. Seed brown.

Drier regions, especially on disturbed soil. Karroo and Namaqualand. Flowers Nov.—Jan. Probably indigenous.

A very variable species of which many varieties have been described ; one of these with rhombic oval leaves, 1—1·5 cm. wide, is var. *sylvester* Thell. (*A. sylvester* Desf.), which occurs locally.

An African species *A. Aschersonianus* Thell., found in central and north Africa, only differs from *A. angustifolius* in having an indehiscent fruit.

A. angustifolius is a native of Africa and probably of southern Europe. It is established in central and northern Europe, in Asia, N. America and Australia.

This is the plant commonly labelled *A. Blitum* in collections.

6. *A. deflexus* L.

Perennial with deep much branched underground parts. Stems up to 50 cm., prostrate, ridged, with rough hairs on the upper parts, becoming glabrous below. Leaves petiolate, rhombic-oval, attenuate at both ends, 1—2·5 × 0·5—1·5 cm., dull green, paler with prominent nerves below, tip rounded or slightly retuse. Inflorescence terminal, leafless, a compound spike, triangular in outline. Bracts ovate, acute, shorter than perianth. Perianth 2, occasionally 3 in male flowers, ovate, acute, half as long as fruit. Fruit brownish or red, compressed, ovate, distinctly narrowed above, with 5 green nerves, slightly emarginate at top, not regularly dehiscent. Seed brown.

Established on disturbed ground and roadsides near towns, especially on the coast belt, but also inland. It occurs as far north as Livingstone. Very common near Cape Town. Flowers July-Oct.

A native of South America : naturalised in southern Europe and elsewhere.

7. *A. lividus* L. (*A. Blitum auct. plur. non Flor. Cap.*)

Annual. Stem 15—20 cm., erect or ascending, soft, glabrous, shining, usually red. Leaves long petioled, 2—2·5 cm., rhombic, cuneate at base, distinctly retuse or emarginate at tip, with a small mucronate point

in the sinus, dark green, slightly paler below with pale nerves. Blades 2—3 × 1—1·5 cm. Inflorescences terminal on main shoot and branches, rather short (1—2 cm.), loose, spicate, leafy below, not exceeding leaves. Bracts oval, acute, much shorter than perianth. Perianth 3, equal and boat shaped in male flowers, in female 1 segment much smaller. Fruit exceeding perianth, soft, red, slightly compressed, without nerves, emarginate at top, not regularly dehiscent. Seed large, dark brown with blunt margin.

A weed of cultivated land. On Cape Peninsula occurs at Rondebosch and Claremont. Flowers April—May. A native of south and middle Europe. The S. African plants belong to the race or variety *ascendens* Thell. (*A. ascendens* Lois.)

This is the plant commonly referred to as *A. Blitum* in European floras.

8. *A. gracilis* Desf. (*A. viridis* Cooke and Wright, Flor. Cap.)

Closely allied to *A. lividus*. Distinguished by short hairs on upper parts ; ridged stem ; leaves slightly emarginate at tip, whitish below ; inflorescence elongated, green ; perianth longer than fruit ; fruit rounded, wrinkled.

Recorded from E. Province but widely spread as a casual. Occurs in Central Africa, Australia, Pacific Is., S. America, and southern Europe.

This is the plant referred to *A. viridis* L. in African floras, but specimens of *A. lividus* and *A. deflexus* are included under that name.

9. *A. Schinzianus* Thell.

Annual, 15—20 cm., Stem pale. Leaves oblong-lanceolate, 1—1·5 cm. including petiole, obtuse, cuneate at base, pale below. Inflorescence short axillary ; bract shorter than perianth, membranous, obtuse. Perianth 4—5, oblong not pointed. Stamens 3—4. Fruit slightly shorter than perianth, wrinkled, opening by irregular transverse split. Seed black.

Indigenous. Dry regions : Karroo near Laingsburg ; and South-West Africa in Great Namaland.

Externally this species resembles *A. Dinteri* or small forms of *A. angustifolius*, but is distinguished from all others by the 4—5 partite perianth with the short axillary inflorescence.